AMENDMENTS TO THE CLAIMS

This listing of the claims will replace all prior versions and listings of claims in the application:

1. (currently amended) A method of treating a patient at risk of loss of cardiac function by cardiac ischemia, comprising

(a) imaging the patient's heart, or a portion thereof, to identify (i) an underperfused region of cardiac muscle, (ii) a source of oxygenated blood that is proximate a boundary of the underperfused region, and (iii) a target area that includes said underperfused-region boundary and a tissue expanse lying between said oxygenated blood supply and said boundary;

(b) at each of a plurality of sites throughout the target area, introducing a stimulus effective to stimulate angiogenesis in myocardial tissue and form a capillary network from the source of oxygenated blood to the underperfused region, wherein the stimulus is an injury produced by a stimulus selected from the group consisting of a mechanical, laser, chemical, thermal, or ultrasonic ~~injury~~ stimulus; and

(c) sustaining a demand for oxygen at the underperfused region for a period sufficient to convert the capillary network into an arterial network.

2. (currently amended) The method of claim 1, wherein the injury is produced by a mechanical stimulus comprising a mechanical cutting device effective to produce an annulus of injury about a core of healthy cells.

3. (previously presented) The method of claim 1, wherein the stimulus is a mechanical stimulus produced by introducing into each of said sites, a wire device having a barbed segment, and the method further includes periodically moving the wire devices relative to the heart, to produce a prolonged angiogenic stimulus at said site.

4. (previously presented) A method of treating a patient at risk of loss of cardiac function by cardiac ischemia, comprising

(a) imaging the patient's heart, or a portion thereof, to identify (i) an underperfused region of cardiac muscle, (ii) a source of oxygenated blood that is proximate a boundary of the underperfused region, and (iii) a target area that includes said underperfused-

region boundary and a tissue expanse lying between said oxygenated blood supply and said boundary;

(b) at each of a plurality of sites throughout the target area, introducing a stimulus effective to stimulate angiogenesis in myocardial tissue and form a capillary network from the source of oxygenated blood to the underperfused region,

wherein the source of oxygenated blood is one in which arteries less than about 1 mm branch into a plurality of surrounding arterioles, and in which arterioles with inner lumen diameters between about 50-200 microns are plentiful, and said sites are spaced from one another at a spacing of between 0.5 to 1 cm; and

(c) sustaining a demand for oxygen at the underperfused region for a period sufficient to convert the capillary network into an arterial network.

5. (previously presented) A method of treating a patient at risk of loss of cardiac function by cardiac ischemia, comprising

(a) imaging the patient's heart, or a portion thereof, to identify (i) an underperfused region of cardiac muscle, (ii) a source of oxygenated blood that is proximate a boundary of the underperfused region, and (iii) a target area that includes said underperfused-region boundary and a tissue expanse lying between said oxygenated blood supply and said boundary,

wherein the underperfused region is in a myocardial region of either of the patient's ventricles, the source of oxygenated blood is the interior of the underperfused heart ventricle region, and the target area includes the region of ventricle endocardium underlying the underperfused region;

(b) at each of a plurality of sites throughout the target area, introducing a stimulus effective to stimulate angiogenesis in myocardial tissue and form a capillary network from the source of oxygenated blood to the underperfused region;

wherein said stimulus is a mechanical injury produced by forming at selected target sites in the target area, elongate channels in the endocardium of the ventricle, where the depth and width of said channels, combined with the blood turbulence produced within the ventricle, is such as to minimize accumulation of blood clot material in the channels; and

(c) sustaining a demand for oxygen at the underperfused region for a period sufficient to convert the capillary network into an arterial network.

6. (previously presented) The method of claim 5, wherein the channels have both width and depth dimension between about 1-5 mm.

7. (previously presented) The method of claim 5, further including the step of introducing an angiogenic growth factor into target-area sites between the underperfused region and adjacent portions of an inner ventricle wall.

8. (previously presented) The method of claim 5, further including the steps of

(d) imaging the heart to identify (i) as a second source of oxygenated blood, coronary arterioles in the epicardial region of the ventricle overlying the underperfused heart-ventricle region, (ii) as a second target area, the area between the second source of oxygenated blood supply and the underperfused region, and the adjacent boundary of the underperfused region; and

(e) introducing into the second target area, at selected sites therein, a stimulus effective to stimulate angiogenesis in the target area.

9. (previously presented) The method of claim 1, wherein the demand for oxygen at the underperfused region is sustained by chemical methods.

10. (previously presented) The method of claim 1, wherein the demand for oxygen at the underperfused region is sustained by at least one implant adapted to elicit a foreign body response.

11. (previously presented) The method of claim 1, wherein the demand for oxygen at the underperfused region is sustained by at least one viral carrier.

12. (previously presented) The method of claim 1, wherein the demand for oxygen at the underperfused region is sustained by requiring the patient to follow an exercise regimen.

13. (previously presented) The method of claim 1, wherein the stimulus is introduced at a first time, and the demand for oxygen at the underperfused region is sustained by introducing a second stimulus at a second time different from the first time.

14. (previously presented) The method of claim 5, wherein the demand for oxygen at the underperfused region is sustained by chemical methods.

15. (previously presented) The method of claim 5, wherein the demand for oxygen at the underperfused region is sustained by at least one implant adapted to elicit a foreign body response.

16. (previously presented) The method of claim 5, wherein the demand for oxygen at the underperfused region is sustained by at least one viral carrier.

17. (previously presented) The method of claim 5, wherein the demand for oxygen at the underperfused region is sustained by requiring the patient to follow an exercise regimen.

18. (previously presented) The method of claim 5, wherein the stimulus is introduced at a first time, and the demand for oxygen at the underperfused region is sustained by introducing a second stimulus at a second time different from the first time